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UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/598,169 06/21/00 TOYOSAWA

K 1035-270

EXAMINER

MM91/1004

NIXON & VANDERHYE PC
8TH FLOOR
1100 N GLEBE RD
ARLINGTON VA 22201

VU, H

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

10/04/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/598,169

Applicant(s)

TOYOSAWA ET AL.

Examiner

Hung K. Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-16,22 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-16,22 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 22 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 22, line 12, and in claim 25, line 8, the phrases “the semiconductor device further comprising a metal wire” are unclear as to whether “a metal wire” being referred to an another metal wire or a second metal wire.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 14, 15, 22, and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Ng (PN 5,843,839).

Ng discloses a semiconductor device comprising,

An active element (3,4,5,6,7) provided on a semiconductor substrate (1);

A metal wire (12b,17b) provided on the active element;

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An interlayer insulating film (18,23) covering the active element;

A pad metal (24) for an electrode pad, the pad metal on the interlayer insulating film;

A barrier metal layer (41) provided on the active element with the interlayer insulating film therebetween, so that the pad metal is provided on the barrier metal layer,

Wherein:

The interlayer insulating film has at least a level difference compensating film for compensating a level difference of the metal wire;

A portion of the level difference compensating film under the pad metal is removed.

With regard to claim 15, Ng discloses the level difference compensating film is formed to a minimum thickness necessary for compensating the level difference of the metal wire.

With regard to claims 22 and 25, Ng discloses a semiconductor device comprising,

An active element (3,4,5,6,7) provided on a semiconductor substrate (1);

A lower interlayer insulating film (14,15,16) formed so as to cover the active element;

A metal wire (17b) provided on the lower interlayer insulating film;

An upper interlayer insulating film (18) formed so as to cover the metal wire;

A pad metal (24) for an electrode pad, the pad metal being provided on the upper interlayer insulating film,

Wherein each of the lower and upper interlayer insulating films have a trilaminar structure, each of first (15,middle portion 18) and third (lower portion of 18,lower portion of 23)

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layers of the trilaminar film being a silicon nitride film or a silicon oxide film, while a second layer (16, upper portion of 18) of the trilaminar film being spin-on-glass;

The semiconductor device further comprising a second metal wire (12c, 17c) formed on the active element, the film formed of spin-on-glass in the interlayer insulating film being formed to a minimum thickness necessary for compensating the level difference of the metal wire.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ng (PN 5,843,839) in view of Goto (5,306,936, of record).

Ng discloses all of the claimed limitations except a passivation film being covering a large part of the pad metal. However, Goto discloses a semiconductor device comprising a passivation film (16,30,50) being covering a large part of a pad metal (15,29,49). Note Figures 1G, 2, 6, and 7 of Goto. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Ng's having a passivation film being covering a large part of the pad metal, such as taught by Goto, in order to protect the device from external contamination.

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Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079. The examiner can normally be reached on Mon-Thurs 7:00-5:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

September 25, 2001

Steven Loke
Primary Examiner

